

REMARKS

In the office action dated March 11, 2005, the Examiner rejected claims 1-17. Applicant has amended claims 1, 3, 6, 8, and 13 and canceled claims 2, 5, 9, 11, 14, and 16. The Examiner's comments and rejections are addressed in the order they were presented in the Office Action.

The 35 U.S.C. § 102 Rejection

The Examiner rejected claims 8-10, 12-15, and 17 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 1,067,915 ("Haman"). However, Applicant respectfully traverses the rejection in light of the amendments.

Applicant has amended claims 8 and 13 to further recite each end of the engine cylinder further comprising intake and exhaust valves, the intake and exhaust valves being disposed such that operational directions thereof are identical to each other, and the piston is coupled through each said end to crankshafts. Support for these amendments can be found in canceled claims 9, 11, 14, and 16, respectively. Additional support for the amendment can be found in the specification (Paragraphs [0026]-[0027] and FIGs. 4A-4B), describing the intake and exhaust valves being disposed such that they have operational directions that are identical to each other.

Haman teaches the use of one crankshaft 20, one camshaft 37, one intake valve 26, and one exhaust valve 32, in connection with an explosive engine (FIGs. 1-3). In addition, Haman provides that during the intake stroke the intake valve 26 is opened, while the exhaust valve 32 is closed (FIG. 4). On the other hand, FIG. 5 of Haman provides that during the exhaust stroke 32 the exhaust valve is opened while the intake valve 26 is closed. The opening and closing of the exhaust valve is through the operation of the camshaft 37 (FIG. 3).

In contrast, Haman does not teach the use of two crankshafts that use two sets of intake and exhaust valves. In addition, Haman does not teach that the intake and exhaust valves being disposed such that they have operational directions that are identical to each other, which is due to the limitation of having a single intake valve and single exhaust valve.

As such, Haman does not anticipate claims 8 and 13. Since claims 10, 12, 15, and 17 depend on claims 8 and 13, respectively, Haman also does not anticipate them. Therefore, Applicant respectfully requests that the rejection be withdrawn.

The 35 U.S.C. § 103 Rejection

The Examiner rejected claims 1-7, 11, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Haman in view of U.S. Patent No. 5,676,097 (“Montresor”). Applicant, however, traverses the rejection in light of the amendments.

More specifically, Applicant has amended claim 1 to further recite that “each of the combustion chambers is covered with a cylinder head on which at least one intake valve, at least one exhaust valve, and a spark plug are mounted and the at least one intake valve and the at least one exhaust valve being disposed such that operational directions thereof are identical to each other.” Applicant also has amended claim 1 to recite “each end of the piston is respectively connected to one of the pair of crankshafts with a connecting rod.” Support for this amendment can be found in canceled claims 2 and 5. Additional support for the amendment can be found in Paragraphs [0026] – [0027] and FIGs. 4A-4B of the specification. Furthermore, as a result of the cancellation of claims 2 and 5, Applicant has amended claims 3 and 6 so that proper antecedent basis can be maintained.

In this particular case, the Examiner has not established that Haman in view of Montresor does not teach each and every limitation of claim 1, thereby not satisfying the requirements of prima facie obviousness. As noted before, Haman does not teach the use of two crankshafts that use two sets of intake and exhaust valves, and it does not teach that the intake and exhaust valves being disposed such that they have operational directions that are identical to each other. As such, Haman does not anticipate claim 1 and its dependents, claims 3-7.

However, Montresor does not cure the deficiencies of Haman. Montresor discloses the use of two crankshafts (col. 3, lines 58-60) that is used in a high-efficiency explosion engine with a double-acting piston cooperating with auxiliary feed inlet components (Abstract). Further, Montresor does not teach that the intake valve and the exhaust valve being disposed such that operational directions thereof are identical to each other, despite the use of two crankshafts. Thus, Montresor also does not anticipate claim 1 and its dependents, claims 3-7.

In light of the foregoing, the Examiner has not established prima facie obviousness with Haman in view of Montresor because Haman and Montresor, alone or in combination, do not teach each and every limitation of claim 1 and its dependents, claims 3-7. Since

Applicant has canceled claims 11 and 16, Haman in view of Montresor is now moot with respect to these claims. As such, Applicant respectfully request withdrawal of the rejection.

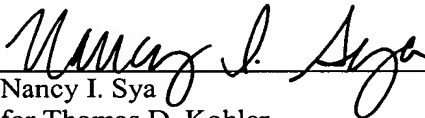
CONCLUSION

In view of the foregoing amendments and remarks, it is believed that the application as a whole is in form for allowance. Should the Examiner have any continuing objections, Applicant respectfully asks the Examiner to contact the undersigned at 415-442-1000 in order to expedite allowance of the case. Authorization is granted to charge any outstanding fees due at this time for the continued prosecution of this matter to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (matter no. 060944-0207-US).

Respectfully submitted,

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